

# Considerations in volatility trading



This paper answers the following questions about adding volatility strategies to a diversified portfolio:

1. What is volatility?
2. Why does a volatility risk premium exist and why does it persist?
3. Where do volatility strategies fit into a portfolio?
4. What are alternative portfolio management techniques?
5. What are the strategy construction techniques for harvesting a volatility risk premium?



Scott Maidel, CFA, CAIA, FRM,  
Senior Portfolio Manager,  
Equity Derivatives

## What is volatility?

“Volatility” in a portfolio can mean different things, and may be discussed in three different contexts:

1. Realized volatility – historical volatility, as observed over a specific period;
2. Implied volatility – typically, the volatility that is implied in option prices;
3. Expected volatility – an expectation of, or a forecast for, volatility over a specified future period.

The often cited “volatility risk premium” is typically discussed as the difference between an asset’s implied/expected volatility and its realized volatility. Volatility traders often concentrate on:

- **Implied to realized volatility** – refers to spread, in annualized volatility points, between option-implied volatility and the subsequent realized volatility of the underlying security or index;
- **Volatility skew** – systematic changes in implied volatility due to changes in option strike value (for example, the higher implied volatility typically associated with both

lower strikes on equity index options and higher strikes on volatility options);

- **Volatility term structure** – the level of volatility across tenor (time to expiration) for a specific option type or futures curve;
- **Volatility of implied volatility** – refers to the option-implied volatility of volatility options.

After this look at how market participants discuss and approach volatility, our next logical questions are: Why does a volatility risk premium exist and persist? Where can this fit in a portfolio, and what are my alternatives in managing portfolio volatility? We will also touch on strategy construction techniques for harvesting the volatility premium.

In the remainder of this article, we discuss a volatility-selling program based on broad-based equity indexes and volatility indexes. Short index volatility strategies have the potential to achieve passively generated returns, an appealing diversification and risk-adjusted return benefit.

## Why does a volatility risk premium exist and why does it persist?

Historically, implied volatility exceeds its ex-post realized volatility more than 80% of the time, meaning that option buyers typically pay too much. Why? In general, investors are risk-averse and will pay more than is “fair” for the insurance that an option (or a volatility exposure) provides by buying the downside economic risk. There is a similar dynamic in the matter of why insurance companies are profitable: they take in more funds via insurance premiums than they will eventually be required to pay out in claims. The investor holding a diversified portfolio of volatility strategies may benefit from a similar economic gain over the long term.

The most commonly referenced implied volatility measure is the CBOE S&P 500 Implied Volatility Index (VIX)<sup>1</sup>. Exhibit 1 displays the VIX in relation to the S&P 500 Index. Exhibit 2 displays the implied volatility to realized volatility spread, in annualized volatility points, of the VIX versus the subsequent realized volatility of the S&P 500. This spread has persisted over various market and volatility environments and has exceeded subsequent annualized realized volatility by 28%, on average, since 1990, and by 31% since March 2009.

## Where can volatility strategies fit into a portfolio?

There is no consensus on this question. The issue is whether investors will benefit from adding such exposure to their portfolios. The important starting point is to acknowledge that buying volatility is a hedging activity and that selling volatility, whether in equity, commodity, rates or FX, is a risk-seeking facilitation of hedging flow that demands compensation. Whether the investor allocates the exposure among equity, alternatives or other investments is left to individual or plan preference.

All this said, there is good reason to think of volatility as being a new asset class. VIX-style volatility options and futures are now available for the VStoxx Index and the Russell 2000® Volatility Index; for gold and oil; and for some individual securities. One volatility-trading framework enables investors to understand and trade all of these instruments, even though the underlying assets can be from different asset classes. We believe institutional investors should think twice before closing the door on this opportunity.

## What are alternative portfolio management techniques?

While there is conceptual overlap among the different approaches to managing risk, it is important to make the distinction between managing overall portfolio volatility with traditional portfolio techniques versus entering into a specific volatility-trading strategy.

<sup>1</sup> Standard & Poor's Corporation is the owner of the trademarks, service marks, and copyrights related to its indexes. Indexes are unmanaged and cannot be invested in directly.

The landscape for managing volatility includes:

- **Strategically de-risking** – holding less-risky assets<sup>2</sup>;
- **Diversifying** – among additional asset classes;
- **Changing the driver of return sources** – pure volatility risk-premium strategies;
- **Changing the shape of the return distribution** – covered-call, put-write, equity-replacement strategies;
- **Changing the exposure based on risk regime** – volatility-responsive asset allocation.

## What are the strategy construction techniques for harvesting a volatility risk premium?

A few of the most common examples of return-seeking short volatility strategies are covered calls; cash-secured put writes; short delta-hedged index options; short equity index variance swaps; and short VIX futures. Some volatility strategies include embedded market beta (directional) exposure, and some can be considered pure exposures to volatility. Covered call and put-write strategies are examples of those with embedded directional exposure. Whether an investor is considering options, swaps or futures, common to the use of any of these instruments is the need to specify trading strategy.

If a strategy is implemented systematically, its construction can define:

- **Tenor selection** – such as weekly, biweekly and monthly options or swaps, and front- or back-month futures. Under normal circumstances, for a volatility-selling strategy, shorter-tenor instruments should be considered, due to the speed of time decay for options or the magnitude of the term structure roll-down, which is typically highest for closest-to-maturity instruments.
- **Strike selection (if applicable)** – such as a predefined strike based on option moneyness, or delta. This selection depends greatly on the trader's skill and experience, but a general assumption is that out-of-the-money options typically have the largest gaps between implied and subsequently realized volatility.
- **Roll diversification** – approached by overlapping the maturity cycle, which has an overall smoothing effect on strategy risk profile. This strategy is operationally more complex, but it may reduce investment risk.

For those seeking to achieve long-term favorable results, careful implementation of volatility strategies is critical.

<sup>2</sup> Please remember that all investments carry some level of risk, including the potential loss of principal invested. They do not typically grow at an even rate of return and may experience negative growth. As with any type of portfolio structuring, attempting to reduce risk and increase return could, at certain times, unintentionally reduce returns.

Operational considerations cannot be overlooked. They can include:

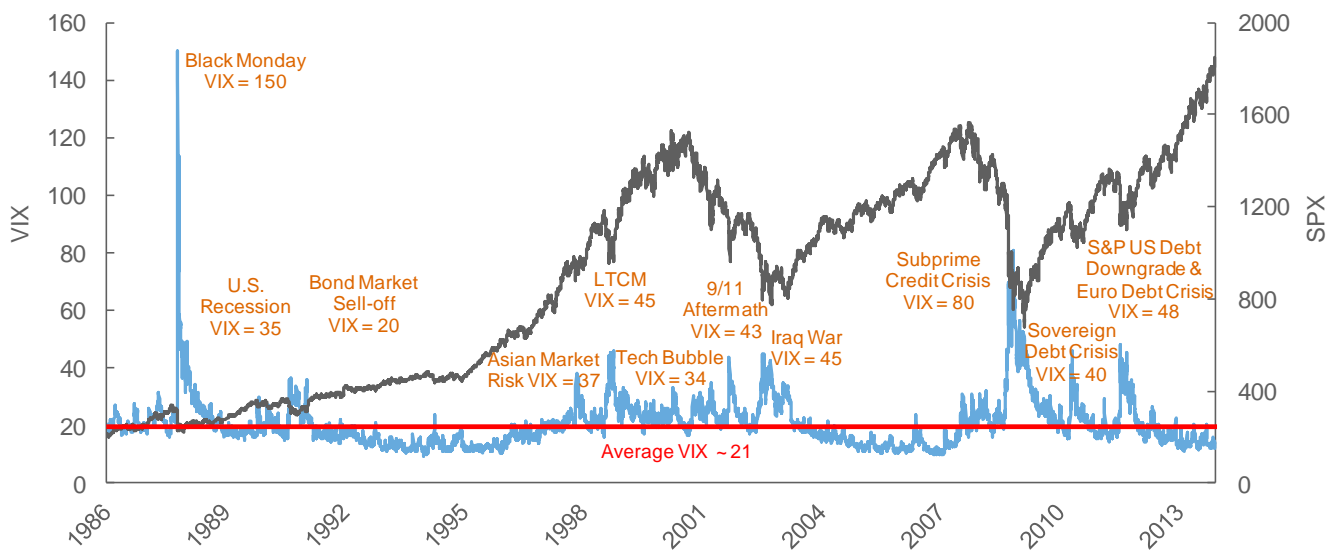
- Frequency of settlement requirements;
- Availability of listed option strike and tenor versus Over-the-Counter “OTC” (specific to options);
- Margin requirements for listed instruments versus OTC;
- Reporting requirements.

## Concluding thoughts

The volatility strategies described here are systematically net short over long-term rolling horizons. From the perspective of a short volatility strategy, we believe in diversifying across multiple sources of structural volatility risk premia. Taken together, the results offer a compelling reason for adding volatility strategies to a diversified portfolio. Diversifying among strategies seeks to balance return potential with overall portfolio standard deviation, risk-adjusted return and diversification benefits.

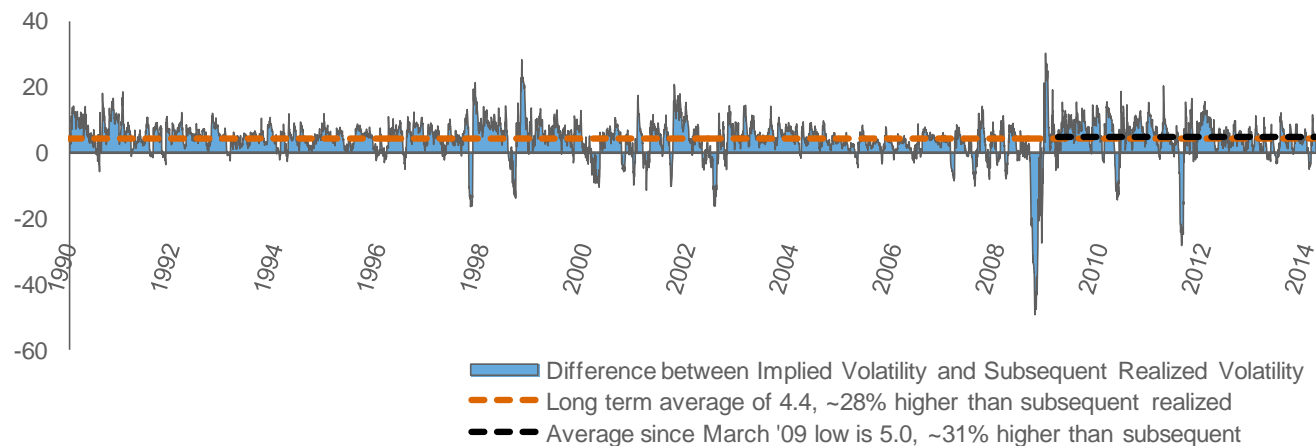
## Appendix

Exhibit 1: VIX versus S&P 500 Index<sup>3</sup>



Source: Bloomberg, Russell Investments. January 2, 1986 to December 31, 2013.

Exhibit 2: S&P 500 Index volatility premium spread



Source: Bloomberg, Russell Investments. January 2, 1990 to February 28, 2014.

<sup>3</sup> Standard & Poor's Corporation is the owner of the trademarks, service marks, and copyrights related to its indexes. Indexes are unmanaged and cannot be invested in directly.

---

## RELATED READING

Maidel, S., K. Sahlin and C. Anselm (2013, April). "9 billion and counting: An overview of current options-based risk management strategies." *Russell Research*.

Maidel, S., and D. Rae (2012, May). "Equity volatility and implications for option strategies." *Russell Strategy Spotlight*.

Maidel, S., and K. Sahlin (2012, July). "Capturing the volatility premium through call overwriting." *Russell Research*.

## ABOUT RUSSELL INVESTMENTS

Russell Investments provides strategic advice, world-class implementation, state-of-the-art performance benchmarks and a range of institutional-quality investment products, serving clients in more than 35 countries. Russell provides access to some of the world's best money managers. It helps investors put this access to work in defined benefit, defined contribution, public retirement plans, endowments and foundations and in the life savings of individual investors.

## FOR MORE INFORMATION:

Call Russell at **800-426-8506** or  
visit **[www.russell.com/institutional](http://www.russell.com/institutional)**

## Important information

---

This material is directed exclusively at investment professionals. Any investments to which this material relates are available only to or will be engaged in only with investment professionals.

Nothing contained in this material is intended to constitute legal, tax, securities, or investment advice, nor an opinion regarding the appropriateness of any investment, nor a solicitation of any type. The general information contained in this publication should not be acted upon without obtaining specific legal, tax, and investment advice from a licensed professional.

Copyright© 2014 Russell Investments. All rights reserved. This material is proprietary and may not be reproduced, transferred, or distributed in any form without prior written permission from Russell Investment Group. It is delivered on an "as is" basis without warranty.

Russell Investment Group is a Washington, USA corporation, which operates through subsidiaries worldwide, including Russell Investments, and is a subsidiary of The Northwestern Mutual Life Insurance Company.

Russell Investments is the owner of the trademarks, service marks, and copyrights related to its respective indexes.

The Russell logo is a trademark and service mark of Russell Investments.

Unless otherwise noted, source for the data in this presentation is Russell Implementation Services Inc.

This material is a product of Russell Implementation Services Inc., a registered investment advisor and broker-dealer, member FINRA, SIPC.

Russell Implementation Services Inc. part of Russell Investment Group, a Washington USA corporation, which operates through subsidiaries worldwide.

Standard & Poor's Corporation is the owner of the trademarks, service marks, and copyrights related to its indexes. Indexes are unmanaged and cannot be invested in directly.

Date of first use: May 2014

RIS RC: 2284